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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,260	08/18/2006	John A. Johansen	FMCE-P145	6093

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EXAMINER	
LEE, CHUN KUAN	

ART UNIT	PAPER NUMBER
2181	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/590,260	JOHANSEN ET AL.	
	Examiner	Art Unit	
	Chun-Kuan Lee	2181	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6 and 8-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 8-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 August 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/18/2006 & 12/26/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

I. ACKNOWLEDGEMENT OF REFERENCES CITED BY APPLICANT

1. As required by **M.P.E.P. 609(C)**, the applicant's submissions of the Information Disclosure Statement dated December 18, 2006 and December 26, 2007 are acknowledged by the examiner and the cited references have been considered in the examination of the claims now pending. As required by **M.P.E.P 609 C(2)**, a copy of the PTOL-1449 initialed and dated by the examiner is attached to the instant office action.

II. OBJECTIONS TO THE ABSTRACT

2. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:
(1) if a machine or apparatus, its organization and operation;
(2) if an article, its method of making;
(3) if a chemical compound, its identity and use;
(4) if a mixture, its ingredients;
(5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

4. The abstract of the disclosure is objected to because the abstract does not commence on a separate physical sheet, preferably following the claims, under the heading “Abstract ” or “Abstract of the Disclosure.” Additionally, please note that the sheet or sheets presenting the abstract may not include other parts of the application or other material. The abstract in an application filed under 35 U.S.C. 111 may not exceed 150 words in length. The purpose of the abstract is to enable the United States Patent and Trademark Office and the public generally to determine quickly from a cursory inspection the nature and gist of the technical Correction is required disclosure. See MPEP § 608.01(b).

III. REJECTIONS BASED ON 35 U.S.C. 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 19 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

As per claim 19, it is not fully clear to the examiner as to where in the Specification/Drawings supports/enables the claimed limitation of "... comprises a current loop which is routed through each said electrical connector and said central junction ...".

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 3-6, 14-15 and 17-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 3-6 recites the limitation "the cable unit". There is insufficient antecedent basis for this limitation in the claim.

Claims 14-15 and 17-19 recites the limitation "said cable unit". There is insufficient antecedent basis for this limitation in the claim.

Multiple instances in claims 3-6 recite the claimed limitation of "the cable unit", wherein it is not fully clear to the examiner as to which cable unit the applicant is referring to; the examiner will assume the claimed limitation of “the at least one modular cable unit” in each respective claims for the current examination.

Multiple instances in claims 14-15 and 17-19 recite the claimed limitation of "said cable unit", wherein it is not fully clear to the examiner as to which cable unit the applicant is referring to; the examiner will assume the claimed limitation of "said at least one modular cable unit" in each respective claims for the current examination.

IV. REJECTIONS BASED ON PRIOR ART

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-5, 8-9, 11-18 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of Sitte (US Patent 5,469,150).

8. As per claim 1, AAPA teaches a control system for a subsea installation, the control system comprising:

a control module (Specification, p. 1, ll. 8-33); and

a plurality of devices (e.g. sensors, actuators) which are connected to the control module (Specification, p. 1, ll. 8-33);

AAPA does not teach the control system comprising: a common bus … the plurality of devices are each removably connectable to the common bus …a bus

controller having a unique address … means for communicating with each device over the common bus.

Sitte teaches a control system comprising:

a common bus (Fig. 1, ref. 10 and Fig. 11, ref. 770, 772, 780, 782) which is connected to a control module (Fig. 11, ref. 220, 230, 704, 710, 712, 714, 730) (col. 15, l. 18 to col. 17, l. 49); and

a plurality of devices (Fig. 1, ref. 14, 16, 18-19, 21-22, 26-27, 29-30, 34) are each removably connectable to the common bus (Fig 1, ref. 10) (col. 7, l. 8 to col. 8, l. 51 and col. 15, l. 18 to col. 17, l. 49);

wherein each device comprises a bus controller having a unique address (e.g. identification bits) (col. 4, ll. 63-66; col. 13, ll. 17-22 and col. 15, l. 18 to col. 17, l. 49); and

wherein the control module comprises means for communicating with each device over the common bus (Fig. 11, ref. 230; col. 9, ll. 39-64; col. 13, ll. 17-22 and col. 15, l. 18 to col. 17, l. 49).

It would have been obvious for one of ordinary skill in this art, at the time of invention was made to include Sitte's control system configuration into AAPA's subsea installation for the benefit of utilizing the Controller Area Network (CAN) protocol which permits efficient communication between individual devices including sensors and actuators at a faster data rate in a high security environment (Sitte, col. 2, l. 59 to col. 3, l. 5 and col. 4, ll. 1-38) to obtain the invention as specified in claim 1.

9. As per claim 2, AAPA and Sitte teach all the limitations of claim 1 as discussed above, where Sitte further teaches the control system comprising wherein the common bus comprises at least one modular cable unit (Sitte, Fig. 1; Fig. 11 and col. 15, l. 18 to col. 17, l. 49), wherein the modular cable unit enables the plurality of device to be able to be connected anywhere on the common bus (Sitte, Fig. 1, ref. 10).

10. As per claim 3, AAPA and Sitte teach all the limitations of claim 2 as discussed above, where Sitte further teaches the control system comprising wherein the at least one modular cable unit comprises a cable having at least one electrical connector at each end (Sitte, Fig. 1 and col. 15, l. 18 to col. 17, l. 49), as the plurality of cable segments (Sitte, Fig. 1, ref. 31, 33, 35) would each have the connector at each end.

11. As per claim 4, AAPA and Sitte teach all the limitations of claim 2 as discussed above, where Sitte further teaches the control system comprising wherein the common bus further comprises at least one distribution hub (Sitte, Fig. 1, ref. 15, 17, 20) which is removably connectable to the at least one modular cable unit (Sitte, Fig. 1; col. 7, l. 8 to col. 8, l. 51 and col. 15, l. 18 to col. 17, l. 49).

12. As per claim 5, AAPA and Sitte teach all the limitations of claim 2 as discussed above, where Sitte further teaches the control system comprising wherein the common bus further comprises an end termination (e.g. termination connector) which is

removably connectable to the at least one modular cable unit (Sitte, Fig. 1 and col. 15, l. 18 to col. 17, l. 49).

13. As per claim 8, AAPA and Sitte teach all the limitations of claim 3 as discussed above, where Sitte further teaches the control system comprising wherein said at least one electrical connector is removably connectable to at least one of said plurality of devices (Sitte, Fig. 1; Fig. 11 and col. 15, l. 18 to col. 17, l. 49).

14. As per claim 9, AAPA and Sitte teach all the limitations of claim 1 as discussed above, where Sitte further teaches the control system comprising wherein the common bus comprises a CAN bus (Sitte, col. 4, ll. 1-38).

15. As per claim 11, AAPA and Sitte teach all the limitations of claim 1 as discussed above, where AAPA further teaches the control system wherein at least one of said plurality of devices comprises an electro-hydraulic pod (AAPA, Specification, p. 1, ll. 8-33).

16. As per claim 12, AAPA and Sitte teach all the limitations of claim 1 as discussed above, where both further teach the control system comprising wherein at least one of said plurality of devices comprises an actuator (AAPA, Specification, p. 1, ll. 8-33 and Sitte, col. 2, l. 59 to col. 3, l. 5; col. 7, l. 8 to col. 8, l. 51).

17. As per claim 13, AAPA and Sitte teach all the limitations of claim 1 as discussed above, where both further teach the control system comprising wherein at least one of said plurality of devices comprises a sensor (AAPA, Specification, p. 1, ll. 8-33 and Sitte, col. 2, l. 59 to col. 3, l. 5; col. 7, l. 8 to col. 8, l. 51).

18. As per claim 14, AAPA and Sitte teach all the limitations of claim 2 as discussed above, where Sitte further teaches the control system comprising wherein said at least one modular cable unit comprises a junction (Sitte, Fig. 1, ref. 20; Fig. 11 and col. 7, l. 8 to col. 8, l. 51).

19. As per claim 15, AAPA and Sitte teach all the limitations of claim 14 as discussed above, where Sitte further teaches the control system comprising wherein said at least one modular cable unit further comprises at least one electrical connector and at least two control signal supply cables (Sitte, Fig. 11, ref. 780, 782) extending between said junction and said electrical connector (Sitte, col. 7, l. 8 to col. 8, l. 51 and col. 15, l. 18 to col. 17, l. 49).

20. As per claim 16, AAPA and Sitte teach all the limitations of claim 15 as discussed above, where Sitte further teaches the control system comprising wherein said at least two control signal supply cables are electrically joined at said electrical connector (Sitte, col. 7, l. 8 to col. 8, l. 51 and col. 15, l. 18 to col. 17, l. 49).

21. As per claim 17, AAPA and Sitte teach all the limitations of claim 14 as discussed above, where Sitte further teaches the control system comprising wherein said at least one modular cable unit further comprises at least one electrical connector and at least two control signal return cables (Sitte, Fig. 11, ref. 780, 782) extending between said junction and said electrical connector (Sitte, col. 7, l. 8 to col. 8, l. 51 and col. 15, l. 18 to col. 17, l. 49).

22. As per claim 18, AAPA and Sitte teach all the limitations of claim 15 as discussed above, where Sitte further teaches the control system comprising wherein said at least one modular cable unit further comprises a signal component (Sitte, Fig. 11, ref. 730 and col. 15, l. 18 to col. 17, l. 49).

23. As per claim 20, AAPA and Sitte teach all the limitations of claim 3 as discussed above, where Sitte further teaches the control system comprising wherein at least one electrical connector comprises a female connector (Sitte, col. 15, l. 18 to col. 17, l. 49), as it would have been obvious to one of ordinary skilled in the art to implement the connector to be the female connector.

24. As per claim 21, AAPA and Sitte teach all the limitations of claim 3 as discussed above, where Sitte further teaches the control system comprising wherein at least one electrical connector comprises a male connector (Sitte, col. 15, l. 18 to col. 17, l. 49), as

it would have been obvious to one of ordinary skilled in the art to implement the connector to be the male connector.

25. As per claim 22, AAPA and Sitte teach all the limitations of claim 3 as discussed above, where Sitte further teaches the control system comprising wherein at least one electrical connector comprises a signal termination component (Sitte, col. 15, l. 18 to col. 17, l. 49).

26. Claims 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Sitte (US Patent 5,469,150) as applied to claims 1 and 2 above, and further in view of Adamson et al. (US Patent 7,170,238).

AAPA and Sitte teach all the limitations of claims 1 and 2 as discussed above, wherein Sitte further teaches the control system comprising wherein the common bus further comprises the plurality of devices which is removably connectable to the at least one modular cable unit (Sitte, Fig. 1; Fig. 11 and col. 15, l. 18 to col. 17, l. 49).

AAPA and Sitte do not the control system comprising: a repeater and a battery.

Adamson teaches a control system comprising: a repeater and a battery (col. 3, ll. 44-57 and col. 6, ll. 41-46).

It would have been obvious for one of ordinary skill in this art, at the time of invention was made to include Adamson's repeater and battery into AAPA and Sitte's control system for the benefit of further extending the connection utilizing the repeater (Adamson, col. 3, ll. 47-48), providing internal power to the control module when power

supply fails (Adamson, col. 6, ll. 41-46) and also reducing the cost by optimize the energy consumption for of the CAN network system (Adamson, col. 1, ll. 32-41) to obtain the invention as specified in claims 6 and 10.

27. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Sitte (US Patent 5,469,150) as applied to claim 14 above, and further in view of Longsdorf et al. (US Patent 6,006,338)

AAPA and Sitte teach all the limitations of claim 14 as discussed above, wherein Sitte further teaches the control system comprising wherein said at least one modular cable unit further comprises at least one electrical connector and at least two control signal cables, each of which is routed through each said electrical connector and said central junction (Sitte, Fig. 1; Fig. 11; col. 7, l. 8 to col. 8, l. 51 and col. 15, l. 18 to col. 17, l. 49).

AAPA and Sitte do not teach the control system comprising a current loop.

Longsdorf teach a control system comprising a current loop (col. 3, l. 29 to col. 4, l. 50 and col. 5, ll. 24-30).

It would have been obvious for one of ordinary skill in this art, at the time of invention was made to include Longsdorf's current loop into AAPA and Sitte's control system because of the well known benefit that current loop provides accurate signaling and able to supply power to the devices, and the combination have the additional benefit of having a self diagnostic and set-up process transmitter that is able to

communicate when there is inadequate power on the process link (Longsdorf, col. 2, ll. 29-36) to obtain the invention as specified in claim 19.

V. CLOSING COMMENTS

Conclusion

a. STATUS OF CLAIMS IN THE APPLICATION

The following is a summary of the treatment and status of all claims in the application as recommended by **M.P.E.P. 707.07(i)**:

a(1) CLAIMS REJECTED IN THE APPLICATION

Per the instant office action, claims 1-6 and 8-22 have received a first action on the merits and are subject of a first action non-final.

b. DIRECTION OF FUTURE CORRESPONDENCES

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chun-Kuan (Mike) Lee whose telephone number is (571) 272-0671. The examiner can normally be reached on 8AM to 5PM.

IMPORTANT NOTE

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alford Kindred can be reached on (571) 272-4037. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

March 13, 2008

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Examiner
Art Unit 2181

/Alford W. Kindred/

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